

REMARKS

Entry of the foregoing, reexamination and reconsideration of the subject application are respectfully requested in light of the amendments above and the comments which follow.

As correctly noted in the Office Action Summary, claims 1-30 were pending. By the present response, claim 31 has been added. Thus, upon entry of the present response, claims 1-31 remain pending and await further consideration on the merits.

Support for the foregoing amendments can be found, for example, in at least the following locations in the original disclosure: the original claims and the figures.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claims 1-30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,089,683 to Anderton et al. (hereafter "*Anderton et al.*") in view of U.S. Patent No. 5,027,878 to Revankar et al. (hereafter "*Revankar et al.*") on the grounds set forth in paragraph 3 of the Official Action. Applicants' respectfully traverse the rejection in the Official Action because the rejection has not established a *prima facie* case of obviousness over applicants' independent claims.

As outlined in MPEP §§2143-2143.03, there are three basic criteria to establish a *prima facie* case of obviousness. First, there must be a suggestion or motivation to modify the reference or to combine the teachings. Second, there must be a reasonable expectation of success for the proposed modification or combination. Third, the references must teach or suggest all of the claimed limitations. The rejection based on the disclosure in *Anderton et al.* in view of *Revankar et al.* has failed to establish a *prima facie* case of obviousness because at

least the first and the third criteria have not been met. Accordingly, the rejection is improper and should be withdrawn.

The present claims relate to track pin bushings for endless tracks of track-type machines. The track pin bushings have a wear resistant coating that is metallurgically bonded to an outer portion of the track pin bushing, for example, where a drive sprocket engages and disengages the surface. Generally, the track pin bushing is carburized (for wear resistance) and then an outer portion of the carburized material in at least a portion of the outer surface of the bushing is removed to a depth sufficient to expose a non-carburized layer of the iron-based alloy of the bushing. A separate wear-resistant coating is metallurgically bonded to the non-carburized layer, which has improved bonding. See paragraph [0008]. The wear-resistant coating comprises a fused, hard metal alloy comprising at least 60% iron, cobalt, nickel, or alloys thereof. Applicants' independent claims generally present the above noted exemplary features.

Anderton et al. discloses a track bushing for an endless track of a track-type vehicle. The track bushing 10 includes a vapor deposition coating 70 of chromium nitrides or chromium carbonitrides coated on the ends at surfaces 22, 24, 32, 34 and on the end portion of the inner diameter surface 60 of the track bushing 10. See Figure 1. The coating 70 is limited on the inner surface to about 20% of the total bushing length. See column 3, lines 20-25. *Anderton et al.* further discloses that the coating is preferably .0001 mm to about .02 mm thick (e.g., about .1 micron to about 20 micron).

In contrast to applicants' claims, the Official Action correctly notes that *Anderton et al.* does not specify the material of the track bushing 10. Nor does

Anderton et al. disclose that the material of the track bushing 10 is case hardened. In addition, *Anderton et al.* discloses that the coating 70 is coated on a surface of the track bushing 10 and is not placed in a groove (or other feature exposing non-carburized material) formed in the outer surface.

In light of the deficiencies in the primary reference of *Anderton et al.*, the Official Action relies upon the disclosure in *Revankar et al.* However, the disclosure in *Revankar et al.* does not contribute to a proper obviousness rejection of the present claims.

Revankar et al. discloses a method for impregnating an iron product with a hard wear-resistant material surface layer. The method casts a cast iron into a mold (column 2, lines 62-65) containing a preform (see Figure 4) with a hard wear-resistant material. When the molten cast iron is poured into the mold, the preform is destroyed (e.g., melted) (see column 2, line 66) and the hard wear-resistant material is impregnated into a portion of the cast iron (see, for example, column 7, lines 1 and 52-53 and Figure 1A and 1B and Examples 1 and 2). The hard wear-resistant material is disclosed in Table 2 as being a carbide (metal carbide, CR_3C_2 , WC) or steel. Further description of the casting process and the inverse mold ("pattern"), are disclosed at column 5, lines 3-23.

In contrast to the disclosures in *Anderton et al.* and *Revankar et al.* the present application uses a carburized steel track pin bushing. After carburizing, a portion of outer surface of the track pin bushing is removed to expose non-carburized material and into the space created by the removed portion is placed the wear-resistant coating. The non-carburized material promotes bonding of the wear-resistant coating to the bushing. These features are in contrast to the teachings in

the disclosed references which are (1) not carburized materials, (2) do not remove a material from the surface, and (3) cast the body of the alloy (see the *Revankar et al.* reference). Thus, any combination relying upon the disclosures in the two cited references fails to teach or suggest all of the claim limitations of applicants' independent claims. For at least this reason, the rejection fails to establish obviousness and should be withdrawn.

In addition, the Official Action asserts that Table 2 and claim 26 of *Revankar et al.* disclose a wear-resistant material meeting the claim limitation of a wear-resistant coating comprising a fused hard metal alloy comprising at least 60% iron, cobalt, nickel, or alloys thereof. Applicants respectfully traverse this allegation.

Applicants have reviewed the disclosure in *Revankar et al.* at Table 2 and claim 26 and note that neither disclose applicants' claimed feature. Rather, Table 2 only discloses carbides and steel. There is no discussion of percentages of these materials and claim 26 merely discloses the use of cobalt without any indication of its percentage. Further, applicants note that *Anderton et al.* only discloses a chromium nickel wear-resistant material and at most suggests a stoichiometric value of these elements and not the at least 60% feature of the present claims. Accordingly, the proposed combination of the disclosures does not teach or suggest all of the claim limitations and should be withdrawn. For at least this further reason, the rejection does not establish obviousness and should be withdrawn.

Applicants further note that claim 2 claims that a portion of the outer surface has been removed corresponding to a contact surface adapted to engage with a drive sprocket in an endless track of a track-type machine. The combination of *Anderton et al.* and *Revankar et al.* fails to render obvious this feature.

Anderton et al. discloses placing a wear-resistant surface on an inner diameter portion and an end portion of the track pin. See, for example, Figure 1. *Revankar et al.* merely discloses placing the pattern or preform containing the wear-resistant material at a location where the wear-resistant layer in the casting is to be located. See column 7, lines 4-5. Thus, one of ordinary skill in the art considering the disclosure in *Revankar et al.* and the disclosure in *Anderton et al.* would not have been motivated to modify the *Anderton et al.* reference as proposed in the Official Action. Rather, one of ordinary skill in the art considering the two disclosures would have taken the casting process of *Revankar et al.* and formed the wear-resistant coatings as taught by *Anderton et al.* on the inner and end surfaces. In other words, the two references merely disclose a wear-resistant coating at the end or on the inner diameter and not at a contact surface adapted to engage with a drive sprocket in an endless track of a track-type machine. For at least this further reason, the rejection of claim 2 does not establish a *prima facie* case of obviousness and should be withdrawn.

Claim 3 includes a Vickers hardness of the wear-resistant coating is greater than 950 HV. The Official Action has not addressed this claimed feature. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 3.

If the Official Action is merely relying upon the disclosure in *Revankar et al.* as to a wear-resistant layer with the composition disclosed at Table 2 and claim 26, applicants respectfully traverse this rejection. Such reliance by the Examiner would require that the wear-resistant layer disclosed in *Revankar et al.* inherently have the

claimed properties. However, such a reliance by the Examiner would clearly be an incorrect application of the doctrine of inherency.

In order for a claimed element to be "inherent" in a prior art reference, the claimed element or feature must necessarily result from the prior art. "Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill;" and "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Continental Can Co., U.S.A. v. Monsanto Co., 20 U.S.P.Q.2d (BNA) 1746, 1749 (Fed. Cir. 1991).

In other words, for the claimed Vickers hardness to be inherent in *Revankar et al.*, every reinforcement material that meets the description set forth in the *Revankar et al.* disclosure must have the claimed stiffness. It is not sufficient that one of the reinforcement materials set forth in the *Revankar et al.* disclosure may have the claimed Vickers hardness. See, In re Rijckaert, 28 U.S.P.Q.2d (BNA) 1955, 1957 (Fed. Cir. 1993). ("The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency.").

Although a wear-resistant layer manufactured according to the teachings of *Revankar et al.* may have the same Vickers hardness set forth in claim 3 of the present application, there is no reason based on the teachings of *Revankar et al.* that such a wear-resistant layer must necessarily have the claimed hardness. Accordingly, the claimed hardness is not inherent in *Revankar et al.* The rejection of claim 3 set forth by the Examiner is based on an incorrect understanding of the doctrine of inherency. Thus, the rejection must be withdrawn.

Finally, the rejection of applicants' method claims (e.g., claims 9-25) are improper as an obviousness rejection because the proposed combination of *Anderton et al.* and *Revankar et al.* does not teach or suggest all of the claimed features of these method claims. Namely, *Anderton et al.* does not disclose or suggest removing carburized metal from at least a portion of the metal surface to a depth sufficient to expose a non-carburized layer of the metal as disclosed in claims 9, 16 and 22. Rather, *Anderton et al.* simply places his coating 60 and 70 on an outer surface of the end and the inner diameter of the track bushing. The disclosed method is by vapor deposition. See column 3, line 13. *Revankar et al.* also does not meet applicants' method claim features. Rather, *Revankar et al.* uses a casting process with a preform ("pattern") placed in the mold. Thus, neither of these references either alone or in combination disclose, teach, or suggest applicants' claimed method. For at least these reasons, the rejections of these claims should also be withdrawn.

NEW CLAIMS

Applicants present herein new claims 31 directed to track pin bushing comprising *inter alia*, a first wear protection region and a second wear protection region wherein the first wear protection region is case hardened and the second wear protection region is a metallurgically bonded wear-resistant coating and wherein the hardness of the second region is greater than the hardness of the first region. Applicants respectfully assert that none of the cited references disclose the features of applicants' new independent claim.

CONCLUSION

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

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